Title: **Integrated Human Health and Ecological Risk Assessment**

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Abstract:
Environmental and public health policy continues to evolve in response to new and complex social, economic and environmental drivers. Globalization and centralization of commerce, evolving patterns of land use (e.g., urbanization, deforestation), and technological advances in such areas as manufacturing and development of genetically modified foods have created new and complex classes of stressors and risks (e.g., climate change, emergent and opportunist disease, urban sprawl, genomic change). In recognition of these changes, environmental risk assessment and its use are changing from stressor-endpoint specific assessments used in command and control types of decisions to an integrated approach for application in community-based decisions. As a result, the process of risk assessment and supporting risk analyses are evolving to characterize the human-environment relationship. Integrating risk paradigms combine the process of risk estimation for humans, biota, and natural resources into one assessment to improve the information used in environmental decisions (Suter et al., 2003). A benefit of this approach is that it includes a broader, system-wide evaluation that considers the interacting effects of stressors on humans and the environment, as well the interactions between these entities. To improve our understanding of the linkages within complex systems, risk assessors will need to rely on a suite of techniques for conducting rigorous analyses characterizing the exposure and effects relationships between stressors and biological receptors. Many of the analytical techniques routinely employed are narrowly focused and unable to address the complexities of such an integrated assessment. In this paper, we describe an approach to integrated risk assessment, and discuss qualitative community modeling and Probabilistic Relational modeling techniques that address these limitations and evaluate their potential for use in an integrated risk assessment of cyanobacteria.